

REMARKS

Claims 1-12 were examined in the Office Action mailed September 17, 2005.

1. The Pending Objections Have Been Addressed.

In accordance with the Examiner's helpful suggestions, the Applicants have amended the specification to conform to U.S. practice, and have amended the Specification to address the two instances of incorrect reference numbers. As to the pending claim objections, in view of the extensive citations identified by the Examiner, the Applicants have canceled original claims 1-12, without prejudice, and re-written the claims as claims 13-24 in order to address the issues raised, as well as to improve their readability. These amendments are made solely for the purpose of clarity, and without any intent to alter the original scope of the claims. In view of these amendments, reconsideration and withdrawal of the pending Abstract, Specification and claim objections is respectfully requested.

2. Claims 13-24 Are Patentable Over Bansbach Under § 102(b).

The Applicants respectfully traverse the pending rejection of the claims as unpatentable under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,145,398 to Bansbach, *et al.* ("Bansbach"), on the grounds that this reference fails to disclose all the features of the pending claims for which it is cited.

The pending claims are directed to various embodiments of a control system and method for control of a so-called "automatic manual transmission" (an "automatic MT"), in which improved shift quality is obtained by shifting –

while the clutch is still engaged (i.e., “in a state that said clutch is engaged”) – such that torque transfer between the engine and the wheels is maintained from a first transfer path via at least one intermediate path to a second transfer path. As part of the shifting system, the transitions between gear positions is controlled, at least in part, based on protection of the transmission’s synchronizers from undesired temperature, heat energy and/or friction loss.

Specifically, the transmission is controlled to temporarily provide an intermediate transfer path during shifting, employing at least one synchronizer in which a reduction ratio of the intermediate transfer path is different from the ratio before the shift as well as the ratio after the shift. Depending on at least one of the temperature, heat quantity and/or abrasion loss of each of synchronizers, a suitable connection of gears and synchronizers to form the intermediate transfer path is selected. With this novel approach, torque interruption during shifting may be avoided (and thereby a smooth driving performance attained), while avoiding synchronizer damage, such as by overheating and generating a fire.

The Bansbach reference neither discloses nor teaches the claimed intermediate transfer path, or its use to achieve smooth shifting without torque transfer interruption.

In fact, Bansbach includes a clutch interlock system which *prevents* shifting *unless the clutch is disengaged*. See, e.g., Bansbach at 2:9-22 (“... the system does not proceed with the shift until the clutch has been disengaged. ... Lastly, a clutch interlock module monitors the shift rail and prevents clutch

release before the shift rail engages the selected gear ...").

The cited portion of Bansbach (5:15-6:39) does not disclose the recited controls. Rather than determining the state of a synchronizer and selecting a synchronizer on an suitable intermediate transfer path (to be used to facilitate the shift while the clutch is engaged), Bansbach teaches a control system which determines *how hard its shift actuator 24 should push the shift rail* to cause the shift to occur in a desired time period. While synchronizer temperature may be considered in the Bansbach actuating force calculations, these calculation simply have nothing whatsoever to do with the pending claims' use of temperature as a parameter in engaged-clutch shifting as in the present application.¹

Because Bansbach fails to disclose the claimed approach to avoiding torque interruption "in a state that said clutch is engaged," the pending claims are patentable over this reference. Reconsideration and withdrawal of the pending § 102(b) rejection is respectfully requested.

CONCLUSION

The Applicant respectfully submits that claims 13-24 are in condition for allowance. Early and favorable consideration, and issuance of a Notice of Allowance for these claims is respectfully requested.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #056208.53268US).

Respectfully submitted,

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(...continued)

¹ Bansbach at 10:11-27 is cited as teaching the claimed reduction of drive torque based on the state parameter, but this passage only discloses inhibiting the force applied by the *shift actuator* to the *shift rail*, based on the vehicle's engine oil temperature.